

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group
Art Unit: Unknown
Attorney
Docket No.: SHC0141
Applicant: Hiroaki Taniguchi
Invention: COMPOSITE SHEET
Serial No: Unknown
Filed: Herewith
Examiner: Unknown

} Certificate Under 37 C.F.R. 1.10
}
} "EXPRESS MAIL" MAILING LABEL NUMBER
} EL 731284567US
}
} DATE OF DEPOSIT August 28, 2001
} I HEREBY CERTIFY THAT THIS PAPER OR FEE IS BEING
} DEPOSITED WITH THE UNITED STATES POSTAL SER-
} VICE "EXPRESS MAIL, POST OFFICE TO ADDRESSEE"
} SERVICE UNDER 37 C.F.R. 1.10 ON THE DATE
} INDICATED ABOVE AND IS ADDRESSED TO THE ASSIS-
} TANT COMMISSIONER FOR PATENTS WASHINGTON, DC
} 20231
} on August 28, 2001

} 
} Michelle L. Neal
}

PRELIMINARY AMENDMENT

Box Patent Application
Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Prior to the examination of the above-identified application, please amend the application as follows:

IN THE SPECIFICATION

Please replace the third full paragraph on page 2 with the following:

- -According to this invention the film is formed on its surface opposed to the fibrous sheet with a plurality of bulgy zones extending in one direction in parallel and spaced apart from one another and substantially flat zones each defined between each pair of the adjacent bulgy zones wherein the film is welded along the bulgy zones to the fibrous sheet. - -

Please replace the second full paragraph on page 5 with the following:

- -The film 2 is made of ester-based thermoplastic elastomer resin and is substantially non-porous and moisture-pervious. The elastomer resin is a block copolymer having comprises

hard segments and soft segments. The hard segments are polyester of aromatic dicarboxylic acid and aliphatic diol or of aliphatic dicarboxylic acid and aromatic diol. The soft segments are polyether.- -

Please replace the second full paragraph on page 9 with the following:

- In the composite sheet 1, the film 2 may be formed from any one of urethane-based thermoplastic elastomer resin and amide-based thermoplastic elastomer resin. Alternatively, the film 2 may be formed from any one of following types of resin: styrene-based thermoplastic elastomer resin, 1, 2-polybutadiene-based thermoplastic elastomer resin, olefin-based thermoplastic elastomer resin, chlorinated polyethylene-based thermoplastic elastomer resin, polyvinyl chloride-based thermoplastic elastomer resin and polyfluorocarbon-based thermoplastic elastomer resin.- -

Please replace the last paragraph beginning on page 9 and continuing on page 10 with the following:

- In the composite sheet 1, the nonwoven fabric 3a may be of an inelastically stretchable nonwoven fabric made of polyolefin-based fiber such as polypropylene or polyethylene fiber; polyester-base fiber such as polyethylene terephthalate or polybutylene terephthalate; polyamide-based fiber such as nylon 66 or nylon 6 fiber; acryl-based fiber; core-sheath type conjugated fiber; or side-by-side type conjugated fiber. Such nonwoven fabric 3a may be obtained by any one of spun lace-, needle punch-, melt blown-, thermal bond-, spun bond-, chemical bond- and air through-processes. Alternatively, it is also possible to form the nonwoven fabric 3a with a composite nonwoven fabric comprising a melt blown nonwoven fabric having a high water-resistance sandwiched by two layers of spun bond nonwoven fabric each having a high strength and a high flexibility.- -

Please replace the first full paragraph on page 11 with the following:

- Similarly to the film 2 of Fig. 1, the film 2 is formed with ester-based thermoplastic elastomer resin and substantially non-porous but moisture-permeable. The fibrous sheet 3 comprises fibrous nonwoven fabric 3b formed with thermoplastic synthetic resin. The nonwoven fabric 3b is preferably a stretchable one obtained by spun lace- or spun bond process.- -

Please replace the second full paragraph on page 12 with the following:

- The stock material for the sheet member 3 is not limited to the nonwoven fabric 3a, 3b and it is also possible to use woven or knitted fabric made of thermoplastic synthetic resin fiber such as polyolefin-, polyester-, polyamide- or acryl-based fiber as the stock material for the sheet member 3. The woven or knitted fabric preferably comprises elastic yarn such as false twisted yarn, covered yarn, core spun yarn, plied yarn or air covered yarn. The composite sheet 1 using woven or knitted fabric made of false twisted yarn or elastic yarn as the sheet member 3 is useful as the stock material for comfort stretch clothes such as working clothes, slacks, a jacket or suits; performance stretch clothes such as a training wear or a baseball uniform; or power stretch clothes such as a leotard or spats. The composite sheet 1 is applicable also to other articles such as a tent cloth, gloves, a hat or socks.- -

Please replace the last paragraph beginning on page 12 and continuing on page 13 with the following:

- The composite sheet according to this invention comprises a thermoplastic synthetic resin film that is welded along its bulgy zones to the synthetic resin fibers forming the fibrous sheet so that the film is integrated with the fibrous sheet and has a high peel strength. The film and the fibrous sheet are not adhesively bonded but welded to each other and there is no anxiety that the peel strength might be deteriorated as adhesive agent is deteriorated.- -

IN THE CLAIMS

Please amend Claim 1 as follows:

1. (Amended) A composite sheet comprising:
a thermoplastic synthetic resin film having an upper and a lower surface;
a thermoplastic synthetic resin fibrous sheet bonded to at least one of the upper and lower surfaces of said thermoplastic synthetic resin film;
a plurality or bulgy structural zones formed on a surface of the thermoplastic synthetic resin film that is opposed to said thermoplastic synthetic resin fibrous sheet, the plurality of bulgy structural zones extending in one direction in parallel and spaced apart from one another; and
substantially flat zones defined between adjacent ones of the bulgy structural zones,
said thermoplastic synthetic resin film being welded along said bulgy structural zones to said thermoplastic synthetic resin fibrous sheet.

Please amend Claim 2 as follows:

2. (Amended) The composite sheet according to Claim 1, wherein said thermoplastic synthetic resin film comprises a thermoplastic elastomer resin.

Please amend Claim 3 as follows:

3. (Amended) The composite sheet according to Claim 2, wherein said thermoplastic elastomer resin is a member selected from the group consisting of urethane-based, ester-based and amide-based thermoplastic elastomer resins and said thermoplastic synthetic resin film is substantially non-porous and moisture-pervious.

Please amend Claim 4 as follows:

4. (Amended) The composite sheet according to Claim 1, wherein said thermoplastic synthetic resin fibrous sheet comprises a fibrous nonwoven fabric made of thermoplastic

synthetic resin fibers.

Please amend Claim 5 as follows:

5. (Amended) The composite sheet according to Claim 4, wherein said fibrous nonwoven fabric comprises an elastically stretchable nonwoven fabric obtained by melt-spinning thermoplastic elastomer resin and said thermoplastic synthetic resin film is bonded along the bulgy structural zones to said elastically stretchable nonwoven fabric in an untensioned state.

Please amend Claim 6 as follows:

6. (Amended) The composite sheet according to Claim 1, wherein each of said bulgy structural zones has a width of from about 0.2 to about 2.0 mm and a maximum thickness of from about 40 to about 150 μm and each of said flat zones has a thickness of from about 5 to about 100 μm .

Please amend Claim 7 as follows:

7. (Amended) The composite sheet according to Claim 1, wherein said composite sheet has a water-resistance of 49 hpa or higher as measured in accordance with JIS L 1092A.

Please amend Claim 8 as follows:

8. (Amended) The composite sheet according to Claim 1, wherein said composite sheet has a moisture-permeability of 3000 $\text{g}/\text{m}^2\cdot 24 \text{ Hr}$ or higher as measured in accordance with JIS L 1099A.

IN THE ABSTRACT

Please amend the abstract as follows:

- A composite sheet that includes a film and a fibrous sheet made of thermoplastic, respectively. The film is formed on its surface opposed to the fibrous sheet with a plurality of bulgy zones extending in one direction in parallel to and spaced apart from one another and substantially flat zones defined between each pair of the adjacent bulgy zone. The film is welded along its bulgy zones to the fibrous sheet.- -

• • • R E M A R K S • • •

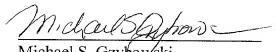
By the present Preliminary Amendment, the specification, claims and abstract have been revised to more clearly describe applicants' invention in accordance with the requirements of 35 U.S.C. § 112.

Care has been taken so as to avoid the addition of new matter in the specification and claims.

Entry of the present Preliminary Amendment prior to the examination of the application is respectfully requested.

In the event applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, applicants hereby petition therefor and authorize that any charges be made to Deposit Account No. 02-0385, Baker & Daniels.

Respectfully submitted,


Michael S. Gzybowski
Reg. No. 32,816
BAKER & DANIELS
111 East Wayne Street
Suite 800
Fort Wayne, Indiana 46802
(219) 460-1661

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Changes Made to Specification Paragraphs

The third full paragraph on page 2 has been amended as follows:

[The improvement according] According to this invention [is in that] the film is formed on its surface opposed to the fibrous sheet with a plurality of bulgy zones extending in one direction in parallel and spaced apart from one another and substantially flat zones each defined between each pair of the adjacent bulgy zones wherein the film is welded along the bulgy zones to the fibrous sheet.

The second full paragraph on page 5 has been amended as follows:

The film 2 is made of ester-based thermoplastic elastomer resin and is substantially non-porous and moisture-pervious. The elastomer resin is a block copolymer having comprises hard segments and soft segments. The hard segments are polyester of aromatic dicarboxylic acid and aliphatic diol or of aliphatic dicarboxylic acid and aromatic diol. The soft segments are polyether.

The second full paragraph on page 9 has been amended as follows:

In the composite sheet 1, the film 2 may be formed [with] from any one of urethane-based thermoplastic elastomer resin and amide-based thermoplastic elastomer resin. Alternatively, the film 2 may be formed [with] from any one of following types of resin: styrene-based thermoplastic elastomer resin, 1, 2-polybutadiene-based thermoplastic elastomer resin, [olefine] olefin-based thermoplastic elastomer resin, chlorinated polyethylene-based thermoplastic elastomer resin, polyvinyl chloride-based thermoplastic elastomer resin and polyfluorocarbon-based thermoplastic elastomer resin.

The last paragraph beginning on page 9 and continuing on page 10 has been amended as follows:

-In the composite sheet 1, the nonwoven fabric 3a may be of an inelastically stretchable nonwoven fabric made of [polyolefine] polyolefin-based fiber such as polypropylene or polyethylene fiber; polyester-base fiber such as polyethylene terephthalate or polybutylene terephthalate; polyamide-based fiber such as nylon 66 or nylon 6 fiber; acryl-based fiber; core-sheath type conjugated fiber; or side-by-side type conjugated fiber. Such nonwoven fabric 3a may be obtained by any one of spun lace-, needle punch-, melt blown-, thermal bond-, spun bond-, chemical bond- and air through-processes. Alternatively, it is also possible to form the nonwoven fabric 3a with a composite nonwoven fabric comprising a melt blown nonwoven fabric having a high water-resistance sandwiched by two layers of spun bond nonwoven fabric each having a high strength and a high flexibility.

The first full paragraph on page 11 has been amended as follows:

Similarly to the film 2 of Fig. 1, the film 2 is formed with ester-based thermoplastic elastomer resin and substantially non-porous but moisture-permeable. The fibrous sheet 3 comprises fibrous nonwoven fabric 3b formed with thermoplastic synthetic resin. The nonwoven fabric 3b is preferably a stretchable one obtained by spun lace- or spun bond process.

The second full paragraph on page 12 has been amended as follows:

The stock material for the sheet member 3 is not limited to the nonwoven fabric 3a, 3b and it is also possible to use woven or knitted fabric made of thermoplastic synthetic resin fiber such as [polyolefine-] polyolefin-, polyester-, polyamide- or acryl-based fiber as the stock material for the sheet member 3. The woven or knitted fabric preferably comprises elastic yarn such as false twisted yarn, covered yarn, core spun yarn, plied yarn or air covered yarn. The composite sheet 1 using woven or knitted fabric made of false twisted yarn or elastic yarn as the

sheet member 3 is useful as the stock material for comfort stretch clothes such as working clothes, slacks, a jacket or suits; performance stretch clothes such as a training wear or a baseball uniform; or power stretch clothes such as a leotard or spats. The composite sheet 1 is applicable also to [the] other [article] articles such as a tent cloth, gloves, a hat or socks.

The last paragraph beginning on page 12 and continuing on page 13 has been amended as follows:

The composite sheet according to this invention comprises [the] a thermoplastic synthetic resin film that is welded along its bulgy zones to the synthetic resin fibers forming the fibrous sheet so that the film is integrated with the fibrous sheet and has a high peel strength. The film and the fibrous sheet are not adhesively bonded but welded to each other and there is no anxiety that the peel strength might be deteriorated as adhesive agent is deteriorated.

Changes Made to Claims

Claim 1 has been amended as follows:

1. (Amended) A composite sheet comprising;
a thermoplastic synthetic resin film having an upper and a lower surface; [and]
a thermoplastic synthetic resin fibrous sheet bonded to at least one of the upper and lower surfaces of said thermoplastic synthetic resin [film,] film; [wherein:]
a plurality or bulgy structural zones [said film is] formed on [its] a surface of the thermoplastic synthetic resin film that is opposed to said thermoplastic synthetic resin fibrous sheet, the [with a] plurality of bulgy structural zones extending in one direction in parallel and spaced apart from one another; and
substantially flat zones [each] defined between [each pair of the] adjacent ones of the bulgy structural zones,

[wherein] said thermoplastic synthetic resin film [is] being welded along said bulgy structural zones to said thermoplastic synthetic resin fibrous sheet.

Claim 2 has been amended as follows:

2. (Amended) The composite sheet according to Claim 1, wherein said thermoplastic synthetic resin film [is made of] comprises a thermoplastic elastomer resin.

Claim 3 has been amended as follows:

3. (Amended) The composite sheet according to Claim 2, wherein said thermoplastic elastomer resin is a member selected from [a] the group [including] consisting of [urethane-, ester-] urethane-based, ester-based and amide-based thermoplastic elastomer [resin] resins and said thermoplastic synthetic resin film is substantially non-porous and moisture-pervious.

Claim 4 has been amended as follows:

4. (Amended) The composite sheet according to Claim 1, wherein said thermoplastic synthetic resin fibrous sheet [is formed with] comprises a fibrous nonwoven fabric made of [said] thermoplastic synthetic resin fibers.

Claim 5 has been amended as follows:

5. (Amended) The composite sheet according to Claim 4, wherein said fibrous nonwoven fabric [is] comprises an elastically stretchable nonwoven fabric obtained by melt-spinning thermoplastic elastomer resin and said thermoplastic synthetic resin film is bonded along [its] the bulgy structural zones to said elastically stretchable nonwoven fabric [under no tension.] in an untensioned state.

Claim 6 has been amended as follows:

6. (Amended) The composite sheet according to Claim 1, wherein each of said bulgy structural zones has a width of from about 0.2 [~] to about 2.0 mm and [the] a maximum thickness of from about 40 [~] to about 150 μm and each of said flat zones has a thickness of from about 5 [~] to about 100 μm .

Claim 7 has been amended as follows:

7. (Amended) The composite sheet according to Claim 1, wherein said composite sheet has a water-resistance of 49 hpa or higher as measured in accordance with JIS L 1092A₂ [method.]

Claim 8 has been amended as follows:

8. (Amended) The composite sheet according to Claim 1, wherein said composite sheet has a moisture-permeability of 3000 g/m²·24 Hr or higher as measured in accordance with JIS L 1099A₂ [method.]

Changes Made to Abstract

The abstract has been amended as follows:

A composite sheet that includes a film and a fibrous sheet made of thermoplastic, respectively. The film is formed on its surface opposed to the fibrous sheet with a plurality of bulgy zones extending in one direction in parallel to and spaced apart from one another and substantially flat zones defined between each pair of the adjacent bulgy zone. The film is welded along its bulgy zones to the fibrous sheet.